

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application. Please amend claims 1, 16, and 78. Please cancel claims 36-71 and 90-121 without prejudice or disclaimer.

1. (Currently amended) A block polymer comprising
at least one first block and at least one second block that are incompatible with each other and that have different glass transition temperatures (T_g), wherein the at least one first and second blocks are linked together via an intermediate **segment block** comprising at least one constituent monomer of the at least one first block and at least one constituent monomer of the at least one second block, and wherein the block polymer has a polydispersity index I of greater than 2.

2. (Original) The block polymer according to claim 1, wherein the at least one first block is chosen from:

- a) a block with a T_g of greater than or equal to 40°C ,
- b) a block with a T_g of less than or equal to 20°C ,
- c) a block with a T_g of between 20 and 40°C , and

the at least one second block is chosen from a block of category a), b) or c) that is different from the at least one first block.

3. (Original) The block polymer according to claim 1, wherein the at least one first block is totally or partially derived from at least one monomer wherein a

homopolymer prepared from the at least one monomer has a Tg of greater than or equal to 40°C.

4. (Previously presented) The block polymer according to claim 3, wherein the at least one monomer whose corresponding homopolymer has a Tg of greater than or equal to 40°C is chosen from the following monomers:

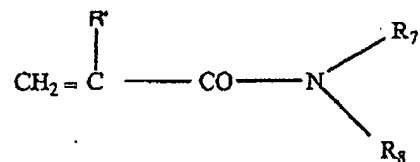
- methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_1$

wherein R_1 is chosen from linear and branched unsubstituted alkyl groups comprising from 1 to 4 carbon atoms, or R_1 is chosen from a C_4 to C_{12} cycloalkyl group,

- acrylates of formula $\text{CH}_2 = \text{CH-COOR}_2$

wherein R_2 is chosen from C_4 to C_{12} cycloalkyl groups, and a tert-butyl group; and

- (meth)acrylamides of formula:



wherein R_7 and R_8 , which may be identical or different, each are chosen from a hydrogen atom and linear and branched alkyl groups comprising 1 to 12 carbon atoms; or R_7 is H and R_8 is a 1,1-dimethyl-3-oxobutyl group, and R' is chosen from H and methyl.

5. (Original) The block polymer according to claim 4, wherein the alkyl group comprising from 1 to 4 carbon atoms is chosen from methyl, ethyl, propyl, and isobutyl groups.

6. (Previously presented) The block polymer according to claim 4, wherein the C₄ to C₁₂ cycloalkyl group is chosen from isobornyl groups.
7. (Original) The block polymer according to claim 4, wherein the alkyl group comprising 1 to 12 carbon atoms is chosen from an n-butyl, t-butyl, isopropyl, isohexyl, isooctyl, and isononyl group.
8. (Original) The block polymer according to claim 3, wherein the at least one monomer whose corresponding homopolymer has a T_g of greater than or equal to 40°C is chosen from methyl methacrylate, isobutyl methacrylate, and isobornyl (meth)acrylate.
9. (Original) The block polymer according to claim 2, wherein the at least one first block with a T_g of less than or equal to 20°C is totally or partially derived from at least one monomer wherein the homopolymer prepared from at least one monomer has a T_g of less than or equal to 20°C.
10. (Original) The block polymer according to claim 9, wherein the at least one monomer whose corresponding homopolymer has a T_g of less than or equal to 20°C is chosen from the following monomers:
- acrylates of formula CH₂ = CHCOOR₃,

wherein R_3 is chosen from linear and branched C_1 to C_{12} unsubstituted alkyl groups, with the exception of the tert-butyl group, wherein at least one heteroatom chosen from O, N and S is optionally intercalated;

- methacrylates of formula $CH_2 = C(CH_3)-COOR_4$,

wherein R_4 is chosen from linear and branched C_6 to C_{12} unsubstituted alkyl groups, wherein at least one heteroatom chosen from O, N and S is optionally intercalated;

- vinyl esters of formula $R_5-CO-O-CH = CH_2$

wherein R_5 is chosen from linear and branched C_4 to C_{12} alkyl groups;

- C_4 to C_{12} alcohol and vinyl alcohol ethers; and

- $N-(C_4 \text{ to } C_{12})$ alkyl acrylamides.

11. (Original) The block polymer according to claim 10, wherein the $N-(C_4 \text{ to } C_{12})$ alkyl acrylamide is chosen from N-octylacrylamide.

12 (Original) The block polymer according to claim 9, wherein the at least one monomer whose corresponding homopolymer has a T_g of less than or equal to 20°C is chosen from alkyl acrylates whose alkyl chain comprises from 1 to 10 carbon atoms, with the exception of the tert-butyl group.

13. (Original) The block polymer according to claim 2, wherein the at least one first block with a T_g of between 20 and 40°C is totally or partially derived from at

least one monomer wherein the homopolymer prepared from the at least one monomer has a Tg of between 20 and 40°C.

14. (Original) The block polymer according to claim 13, wherein the at least one first block with a Tg of between 20 and 40°C is totally or partially derived from at least one monomer wherein the corresponding homopolymer has a Tg of greater than or equal to 40°C and from at least one monomer wherein the corresponding homopolymer has a Tg of less than or equal to 20°C.

15. (Original) The block polymer according to claim 13, wherein the at least one first block with a Tg of between 20 and 40°C is totally or partially derived from at least one monomer chosen from methyl methacrylate, isobornyl acrylate, isobornyl methacrylate, trifluoroethyl methacrylate, butyl acrylate, and 2-ethylhexyl acrylate.

16. (Currently amended) A block polymer comprising at least one first block and at least one second block that are incompatible with each other, the at least one first block having a glass transition temperature (Tg) of greater than or equal to 40°C, and the at least one second block having a glass transition temperature of less than or equal to 20°C, the at least one first and second blocks are linked together via an intermediate ~~segment~~ block comprising at least one constituent monomer of the at least one first block and at least one constituent monomer of the at least one second block and the block polymer having a polydispersity index I of greater than 2.

17. (Original) The block polymer according to claim 16, wherein the at least one first block is totally or partially derived from at least one monomer wherein the homopolymer prepared from the at least one monomer has a Tg of greater than or equal to 40°C.

18. (Original) The block polymer according to claim 16, wherein the at least one first block is a copolymer derived from at least one monomer wherein the homopolymer prepared from the at least one monomer has a Tg of greater than or equal to 40°C.

19. (Previously presented) The block polymer according to claim 17, wherein the at least one monomer whose corresponding homopolymer has a Tg of greater than or equal to 40°C is chosen from:

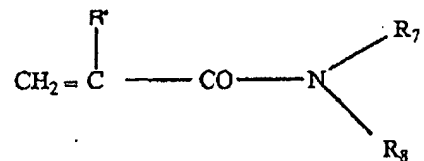
- methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_1$

wherein R_1 is chosen from linear and branched unsubstituted alkyl groups comprising from 1 to 4 carbon atoms, or R_1 is chosen from a C_4 to C_{12} cycloalkyl group,

- acrylates of formula $\text{CH}_2 = \text{CH-COOR}_2$

wherein R_2 is chosen from C_4 to C_{12} cycloalkyl groups, and a tert-butyl group; and

- (meth)acrylamides of formula:



wherein R_7 and R_8 , which may be identical or different, each are chosen from a hydrogen atom and linear and branched alkyl groups comprising 1 to 12 carbon atoms; or R_7 is H and R_8 is a 1,1-dimethyl-3-oxobutyl group, and R' is chosen from H and methyl.

20. (Original) The block polymer according to claim 19, wherein the unsubstituted alkyl group comprising from 1 to 4 carbon atoms is chosen from methyl, ethyl, propyl, and isobutyl groups.

21. (Previously presented) The block polymer according to claim 19, wherein the C_4 to C_{12} cycloalkyl group is chosen from an isobornyl group.

22. (Original) The block polymer according to claim 19, wherein the alkyl group comprising 1 to 12 carbon atoms is chosen from n-butyl, t-butyl, isopropyl, isohexyl, isooctyl, and isononyl groups.

23. (Original) The block polymer according to claim 17, wherein the at least one monomer whose corresponding homopolymer has a T_g of greater than or equal to 40°C is chosen from methyl methacrylate, isobutyl methacrylate, and isobornyl (meth)acrylate.

24. (Original) The block polymer according to claim 16, wherein the at least one first block is present in an amount that ranges from 20% to 90% by weight relative to the total weight of the block polymer.

25. (Original) The block polymer according to claim 24, wherein the at least one first block is present in an amount that ranges from 30% to 80% by weight relative to the total weight of the block polymer.

26. (Original) The block polymer according to claim 24, wherein the at least one first block is present in an amount that ranges from 50% to 70% by weight relative to the total weight of the block polymer.

27. (Original) The block polymer according to claim 16, wherein the at least one second block is totally or partially derived from at least one monomer wherein the homopolymer prepared from the at least one monomer has a Tg of less than or equal to 20°C.

28. (Original) The block polymer according to claim 16, wherein the at least one second block is a homopolymer derived from at least one monomer wherein the homopolymer prepared from the at least one monomer has a Tg of less than or equal to 20°C.

29. (Original) The block polymer according to claim 27, wherein the at least one monomer is chosen from:

- acrylates of formula $\text{CH}_2 = \text{CHCOOR}_3$,

wherein R_3 is chosen from linear and branched C_1 to C_{12} unsubstituted alkyl groups, with the exception of the tert-butyl group, wherein at least one heteroatom chosen from O, N and S is optionally intercalated;

- methacrylates of formula $\text{CH}_2 = \text{C}(\text{CH}_3)\text{-COOR}_4$,

wherein R_4 is chosen from linear and branched C_6 to C_{12} unsubstituted alkyl groups, where at least one heteroatom chosen from O, N and S is optionally intercalated;

- vinyl esters of formula $\text{R}_5\text{-CO-O-CH} = \text{CH}_2$

wherein R_5 is chosen from linear and branched C_4 to C_{12} alkyl groups;

- C_4 to C_{12} alcohol and vinyl alcohol ethers; and

- $\text{N-(C}_4 \text{ to C}_{12})$ alkyl acrylamides.

30. (Original) The block polymer according to claim 29, wherein the $\text{N-(C}_4 \text{ to C}_{12})$ alkyl acrylamide is chosen from N-octylacrylamide.

31. (Original) The block polymer according to claim 27, wherein the at least one monomer whose corresponding homopolymer has a T_g of less than or equal to 20°C is chosen from alkyl acrylates whose alkyl chain comprises from 1 to 10 carbon atoms, with the exception of the tert-butyl group.

32. (Original) The block polymer according to claim 28, wherein the at least one monomer whose corresponding homopolymer has a Tg of less than or equal to 20°C is chosen from alkyl acrylates whose alkyl chain comprises from 1 to 10 carbon atoms, with the exception of the tert-butyl group.

33. (Original) The block polymer according to claim 16, wherein the at least one second block with a Tg of less than or equal to 20°C is present in an amount ranging from 5% to 75% by weight relative to the total weight of the block polymer.

34. (Original) The block polymer according to claim 33, wherein the at least one second block with a Tg of less than or equal to 20°C is present in an amount ranging from 15% to 50% by weight relative to the total weight of the block polymer.

35. (Original) The block polymer according to claim 33, wherein the at least one second block with a Tg of less than or equal to 20°C is present in an amount ranging from 25% to 45% by weight relative to the total weight of the block polymer.

36-71. (Canceled)

72. (Original) The block polymer according to claim 1, wherein each of the at least one first and second blocks comprises at least one monomer chosen from acrylic acid, acrylic acid esters, methacrylic acid, and methacrylic acid esters.

73. (Original) The block polymer according to claim 1, wherein each of the at least one first and second blocks is totally derived from at least one monomer chosen from acrylic acid, acrylic acid esters, methacrylic acid, and methacrylic acid esters.

74. (Original) The block polymer according to claim 2, wherein the difference between the Tg of the at least one first and second blocks is greater than 10°C.

75. (Original) The block polymer according to claim 74, wherein the difference between the Tg of the at least one first and second blocks is greater than 20°C.

76. (Original) The block polymer according to claim 75, wherein the difference between the Tg of the at least one first and second blocks is greater than 30°C.

77. (Original) The block polymer according to claim 76, wherein the difference between the Tg of the at least one first and second blocks is greater than 40°C.

78. (Currently amended) The block polymer according to claim 1, wherein the at least one intermediate ~~segment~~ **block** has a Tg between the Tgs of the at least one first and second blocks.

79. (Original) The block polymer according to claim 1, wherein the block polymer has a polydispersity index of greater than or equal to 2.5.

80. (Original) The block polymer according to claim 79, wherein the block polymer has a polydispersity index of greater than or equal to 2.8.

81. (Original) The block polymer according to claim 80, wherein the block polymer has a polydispersity index ranging from 2.8 to 6.

82. (Original) The block polymer according to claim 1, wherein the block polymer has a weight-average mass (M_w) which is less than or equal to 300,000.

83. (Original) The block polymer according to claim 82, wherein the block polymer has a weight-average mass (M_w) which ranges from 35,000 to 200,000.

84. (Original) The block polymer according to claim 83, wherein the block polymer has a weight-average mass (M_w) which ranges from 45,000 to 150,000.

85. (Original) The block polymer according to claim 84, wherein the block polymer has a number-average mass (M_n) which ranges from 10,000 to 60,000.

86. (Original) The block polymer according to claim 85, wherein the block polymer has a number-average mass (M_n) which ranges from 12,000 to 50,000.

87. (Original) The block polymer according to claim 1, wherein the block polymer is not soluble to an active material content of at least 1% by weight in water or

in a mixture of water and of linear or branched monoalcohols having from 2 to 5 carbon atoms, without pH modification, at room temperature (25°C).

88. (Original) The block polymer according to claim 1, wherein the block polymer is not an elastomer.

89. (Original) The block polymer according to claim 1, wherein the block polymer is a film-forming linear block ethylene polymer.

90-121. (Canceled)